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PHOTOGRAPHIC INTERPRETATION REPORT



POSSIBLE AMM-ASSOCIATED ACTIVITY  
MOSCOW AREA, USSR  
SEPTEMBER 1964-MARCH 1965

AUGUST 1965

COPY 1

40 PAGES

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REFERENCES (Continued)

DOCUMENTS

1. NPIC. R-418/64, Possible AMW-Associated Activity and Other Installations, Moscow Area, USSR, June - August 1964, Nov 64 (TOP SECRET CHESS RUFF)
2. NPIC. R-5144/64, Activity at SA-1 SAM Sites, Moscow, USSR, August - November 1964, Dec 64 (TOP SECRET CHESS RUFF)
3. NPIC. R-260/64, Possible AMW-Associated Facility, SAM Site C16-1, Moscow, USSR, May 64 (TOP SECRET CHESS RUFF)
4. NPIC. R-426/64, Changes at Suspect AMW Phased-Array Radar, Nary-Fominsk, USSR, February - April 1964, Jun 64 (TOP SECRET CHESS RUFF)

REQUIREMENT

CIA. C-RRS-82,036

NPIC PROJECT

11107/65

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## INTRODUCTION

Based on KEYHOLE photography obtained between September 1964 and March 1965, this report describes changes and additions at the following installations: Moscow SAM Sites E05-1, E13-1, E24-1, and E33-1, and at the Naro-Fominsk Suspect AMM Phased-Array Radar (DOG HOUSE) Site (Figure 1). [redacted] provided large-scale, K11-7, coverage of 4 of the 5 installations and provided additional details that permit recognition of the pattern of construction development of the 4 Moscow possible AMM-associated electronic facilities. Recent photography shows that a significant change has occurred in the deployment concept: a second facility is being constructed at the 2 northern SAM sites (E05-1 and E33-1). Although Site E24-1 has only one electronic facility to date, the site has shown consider-

able construction under way. Little or no construction progress had occurred at SAM Site E13-1, southeast of Moscow, between April 1964 and March 1965 [redacted].

[redacted] also provided the first K11-7 photography of the suspect AMM phased-array radar since April 1964 and revealed details of the construction that has been continuing on the DOG HOUSE and its associated components. Based on this March 1965 photography, 2 suspect antennas under construction were identified in Operational Area B.

This report provides descriptions and mensural data for the individual possible AMM electronic facilities (triads) as well as for the launch, support, and guidance areas at the affected SA-1 sites. There is a discussion of the triad and a perspective drawing which shows the major components of such a possible AMM-associated electronic facility; and finally, there is a detailed description of the DOG HOUSE.

Figure 2 shows the system adopted for referencing positions at SA-1 SAM sites. Using the guidance area as a reference point, the left side of the launch area is designated A, the right side B, and the roads as follows: perimeter road; centerline road; and rib roads, numbered from the rib road nearest the guidance area. Launch positions on rib roads are numbered out from the centerline road. Thus, activity at 3A2 would indicate a position on the third rib road, left side of the launch area, at the second launch position out from the centerline road, as shown in red in Figure 2. Identification of the standard buildings in Triad Area 1, which is on side A of the SAM site at the end farthest from the guidance area, and Triad Area 2, under construction at side B of SAM Sites E05-1 and E33-1 in March 1965, is as follows: Building a is the large building, Buildings b and c (clockwise) are the smaller buildings, and Building d is the one adjacent and parallel to Building a, on the side farthest from the guidance area.

## MOSCOW FACILITIES

## MOSCOW SAM SITE E05-1

This site is located at 56-14-34N 38-35-05E (Figure 1), approximately 44 nautical miles (nm) northeast of Moscow. The most recent detailed NPIC report dealing with all components of the site 1/ was based on photography of

August 1964. Since then, 8 missions have covered it, with [redacted] providing the first K11-7 photography of the site.

Construction of a second triad of buildings at this site, was previously reported, 2/ but that report did not incorporate other changes or additions in the launch areas; therefore, in order to maintain continuity in the chronology, many of the details published there will be repeated.

## Triad Areas

The most significant change has been the initial construction on what has been identified as a probable second

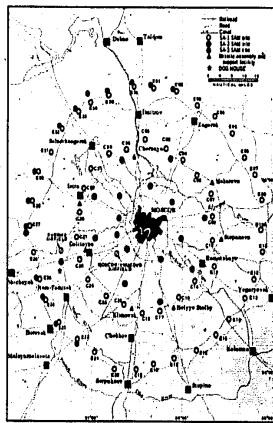


FIGURE 1. LOCATION OF SITES HAVING POSSIBLE AMM-ASSOCIATED ACTIVITY.

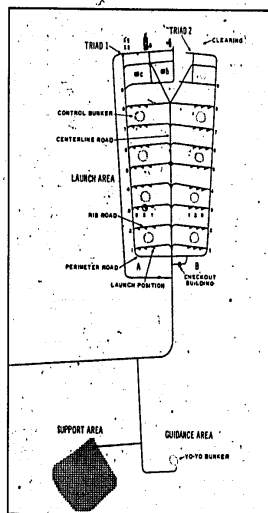


FIGURE 2. TYPICAL SA-1 SAM SITE WITH TRIADS.

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FIGURE 3. SAM SITE EDS-1.

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triad of buildings (Figures 3-6). The second facility, Triad Area 2, is in the northeast corner of the launch area and appears to be similar in orientation and size to its counterpart in the northwest corner, Triad Area 1.

Construction of the second triad began after [redacted] when there was no evidence of construction activity, and before [redacted] by which time there were 3 clearings in Triad Area 2. In October the clearings were 400 feet by 170 feet (Figure 6, item 1), 125 by 115 feet (item 2), and 125 by 85 feet (item 3), forming a triangle with 2 sides 850 feet long and 1 side 910 feet long. Approximately 1 month later, an excavation approximately 160 feet square was observed within the 400- by 170-foot clearing. At that time it was noted that road construction to serve the new facility had begun. Photography of November and December 1964 and January 1965 revealed a continued increase in the road network connecting the 2 triads.

Ground scarring was observed in December at the 125- by 85-foot clearing (item 3), and by late January 1965 it was also observed in the 125- by 115-foot clearing (item 2). Through January, no construction of exterior walls was observed, but the preliminary grading and excavating for footings was apparent. [redacted] a ditch was noted extending from the center of the T-shaped building southwest to the rib road connecting the two areas. On larger scale coverage [redacted] it can be seen that the ditch extends northward toward Triad 1. Two possible cranes were observed in Triad Area 2. Triple security fencing, not discernible on K14-4 photography, was observed on [redacted] extending across the launch area and enclosing Triad Areas 1 and 2. No changes were noted in the exterior configuration of Triad 1 on the larger scale photography.

#### Launch Area

The launch area contains 60 launch positions and 10 control bunkers, of which 12 launch positions and 2 control bunkers are located within the triple fenced area that encompasses the 2 triads. Detailed descriptions and mensural data follow (item numbers are keyed to Figure 6 which portrays the area as seen on [redacted]).

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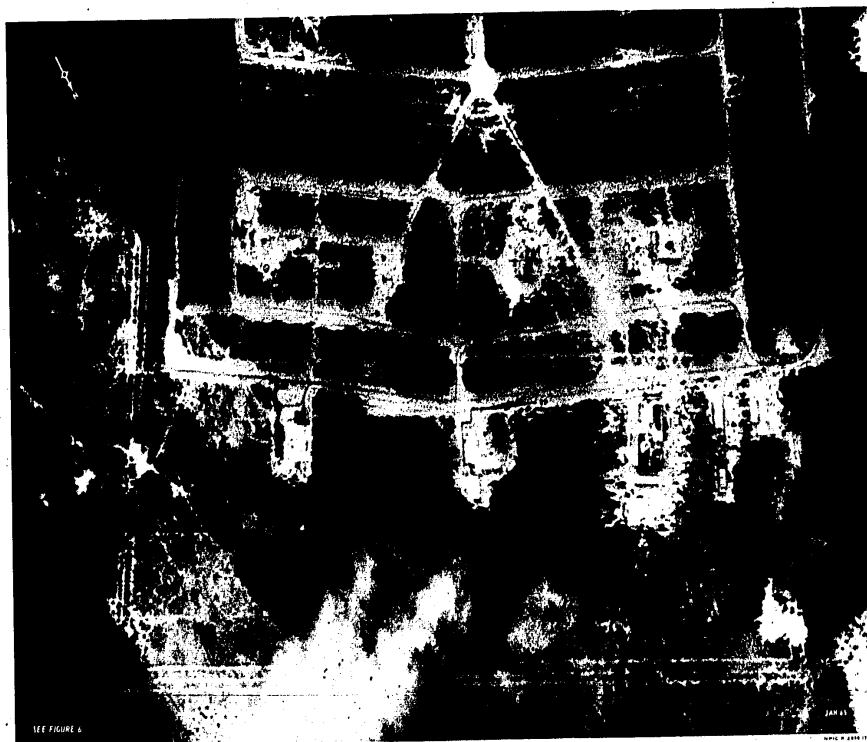


FIGURE 4. TRIAD AREAS.

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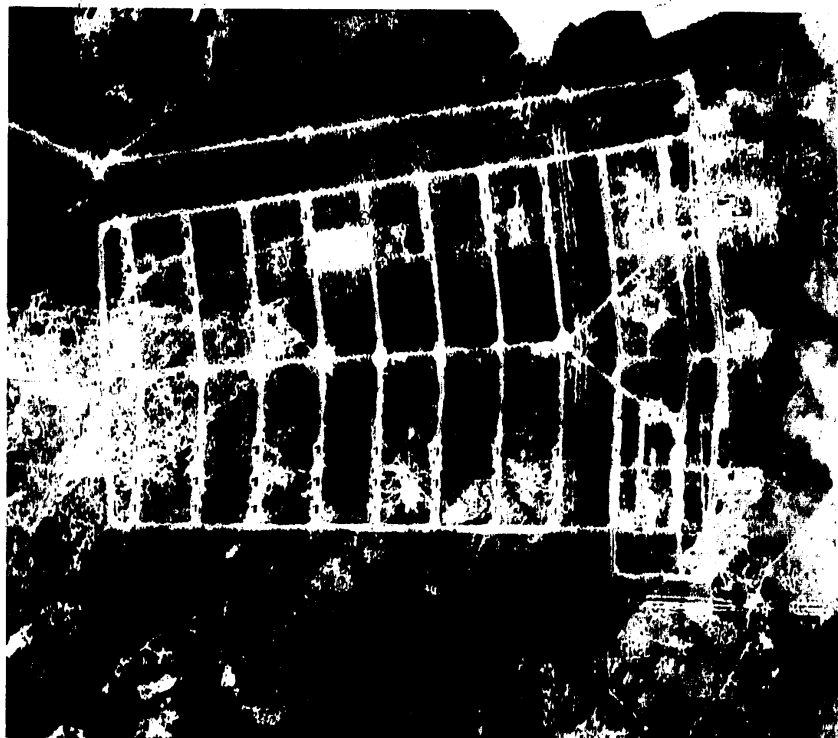
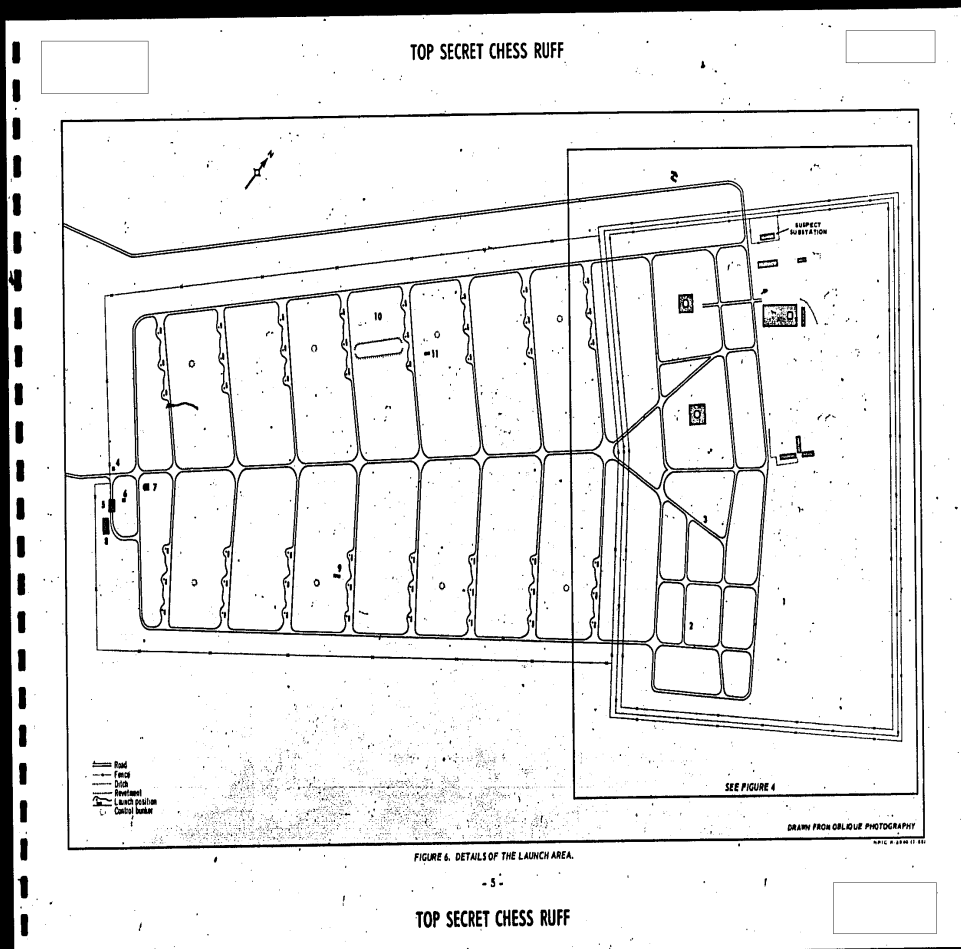


FIGURE 1. LAUNCH AREA.

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- |    |   |         |  |         |   |
|----|---|---------|--|---------|---|
| 4  | Probable security building 25 by 20 feet, gable roof, located at the fence line where the site access road enters launch area   | 25      | Support building 75 by 20 feet, gable roof   | 45      | Multistory apartment-type building 255 by 55 feet and 40 feet high, flat roof                         |
| 5  | Drive-through missile checkout building 80 by 65 feet, gable roof   | 26 - 31 | Barracks-type buildings 145 by 45 feet, gable roofs                                    | 46      | Support building 155 by 30, flat roof with 6 possible ventilators                                     |
| 6  | Support building 25 by 15 feet, gable roof  | 32      | Support building 80 by 30 feet, probably gable roof                                    | 47      | Support building 90 by 20 feet, probably gable roof   |
| 7  | Support building 50 by 35 feet, gable roof  | 33      | Support building 125 by 30 feet, probably gable roof                                   | 48      | Support building 75 by 35 feet, probably gable roof   |
| 8  | Support building 115 by 50 feet, gable roof   | 34      | Probable building 40 by 15 feet, roof configuration undetermined                       | 49      | Support building 75 by 20 feet, probably gable roof   |
| 9  | Support building 60 by 15 feet, probably gable roof   | 35      | Support building 115 by 35 feet, gable roof  | 50      | Support building 70 by 50 feet, probably flat roof  |
| 10 | Drive-through earthen revetment 360 by 100 feet with 30-foot openings in the east and west walls providing access to rib roads 4A and 5A. Walls of the revetment are approximately 20 feet wide at the base and are estimated to be 13 feet high. Orientation of the long axis of the revetment is 45/225 degrees | 36      | Support building 90 by 50 feet with a 45- by 15-foot annex at the south end, flat roof | 51      | Support building 50 by 20 feet, probably gable roof   |
| 11 | Support building 40 by 15 feet, probably gable roof.  | 37      | Support building 60 by 45 feet, probably flat roof                                     | 52      | Support building 45 by 20 feet, probably flat roof  |
|    |   | 38      | Unidentified structure 40 by 20 feet   | 53      | Support building 130 by 55 feet and 10 feet high with a structure located on the east end of the roof |
|    |   | 39      | Support building 60 by 40 feet, probably gable roof                                    | 54      | Barracks-type building 120 by 50 feet and 10 feet high, probably hip roof                             |
|    |   | 40      | Support building 35 by 20 feet, probably flat roof                                     | 55 - 57 | Barracks-type buildings 190 by 55 feet, gable roofs   |
|    |   | 41, 42  | Unidentified structures 15 by 15 feet  | 58      | Support building 20 by 15 feet, probably gable roof   |
|    |   | 43      | Support building 45 by 20 feet, probably flat roof                                     | 59      | Support building 150 by 45 feet, probably gable roof  |
|    |   | 44      | Support building 130 by 50 feet and 25 feet high, flat roof                            |         |   |

## Support Area

The support area contains housing, administration, and support buildings (Figure 7). Detailed descriptions and mensural data follow (item numbers are keyed to Figure 8, which portrays the area as seen on

- 1 Support building 95 by 75 feet, flat roof
- 2 Two tanks, each 30 feet in diameter, probably semiburied
- 3 Probable batch plant 110 by 60 feet with an inclined conveyor on the south side of the building, 75 by 35 feet
- 4 Support building 60 by 30 feet, probably gable roof
- 5-8 Support buildings 30 by 20 feet, probably gable roofs
- 9 Support building 55 by 25 feet, probably gable roof
- 10 Support building 50 by 25 feet, probably gable roof
- 11 Support building 80 by 20 feet, gable roof
- 12 Support building 70 by 30 feet, gable roof
- 13 Support building 85 by 35 feet, gable roof
- 14-21 Multifamily-type dwellings 50 by 40 feet, gable roofs
- 22 Support building 15 by 20 feet, roof configuration undetermined
- 23 Building probably under construction 160 by 40 feet
- 24 Probable equipment shed 60 by 25 feet, flat roof

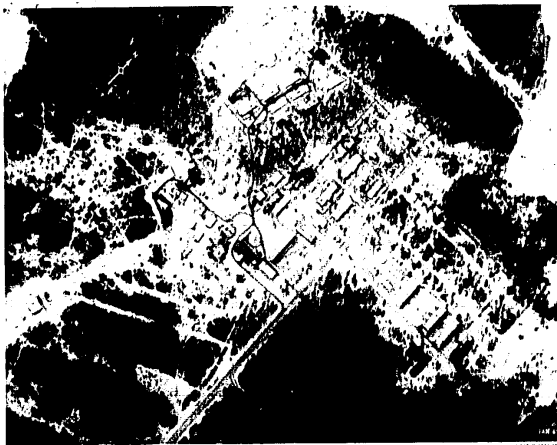


FIGURE 7. SUPPORT AREA.

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- 60 Support building 35 by 30 feet, probably gable roof  
 61 Support building 30 by 15 feet, gable roof  
 62 Support building 125 by 30 feet, probably gable roof  
 63 Support building 60 by 30 feet, gable roof  
 64 Probable building 25 by 15 feet, roof configuration undetermined  
 65 Support building 110 by 50 feet, gable roof  
 66 Support building 60 by 15 feet, probably gable roof  
 67 Support building 45 by 40 feet, probably flat roof  
 68 Standpipe 20 feet in diameter, 20 feet high  
 69 Support building 40 by 25 feet, probably gable roof  
 70 Support building 25 by 15 feet, probably gable roof  
 71 Support building 35 by 25 feet, probably gable roof  
 72-75 Multifamily-type dwellings 90 by 45 feet and 20 feet high, h/p roofs  
 76-78 Multistory apartment-type buildings 215 by 45 feet and 40 feet high, flat roofs
- 79 Partially completed multistory apartment-type building, 215 by 45 feet  
 80 Unidentified structure 115 by 10 feet  
 81 Probable outbuilding  
 82 Probable support building 65 by 15 feet, probably gable roof  
 83-110 Single-family dwellings 30 by 25 feet, gable roofs.

## Guidance Area

The guidance area is located 4,350 feet west of the launch area and consists of a radar bunker, borelight pole, and 5 support buildings. Brief descriptions and mensural data follow (all item numbers are keyed to Figure 9).

- 1 Radar bunker 160 by 100 feet  
 2 Support building 60 by 30 feet, probably gable roof  
 3 Support building 30 by 25 feet, gable roof

- 4 Support building 20 by 20 feet, probably gable roof  
 5 Support building 45 by 20 feet, probably gable roof  
 6 Probable security building 20 by 20 feet.

## MOSCOW SAM SITE E15.1

This site is located at 55-09-50N 38-22-15E (Figure 1), approximately 44 nmi southeast of Moscow. All components of the site were previously reported on, 1/ based on photography through July 1964. Activity in the launch area through August was covered in a later report, 2/ but will be repeated here in order to present a complete description of all activity at the site (Figure 10).

Between the end of July 1964 and mid-March 1965 the site has been observed on 5 missions, but the December, January, and March coverages showed little change through the snow.

## Triad Areas

Most significant at this site is the lag in the construction progress on the major buildings of the triad (Figures 11-13). A comparison of [ ] March 1965 with that obtained a year ago on [ ] reveals that little or no progress had occurred in that period. The roof of Building b remains in virtually the same status as when it was observed under construction in March 1964, and the appearance of the exterior walls of Building a is identical with the open appearance seen on the visible sides in 1964. The footings for Building d were first observed in February 1964, but through March 1965 no further construction had been accomplished. Material probably intended to be used for construction of a T-shaped building, seen at other sites, had been seen as early as June 1963 and had remained in the same location with no evidence of movement between June 1963 and March 1965. Cranes observed in April 1964 were still present in the triad area on the March 1965 photography, which may be an indication that the construction at this site was only temporarily halted and would be resumed at a later date.

- The following additional structures appear in Figure 11.  
 1 Unidentified structure 40 by 15 feet and 6 feet high  
 2 Incomplete building of undetermined size  
 3 Building under construction, 80 by 30 feet and 15 feet high, low pitched gable roof  
 4 Building 120 by 45 feet and 25 feet high, low pitched gable roof

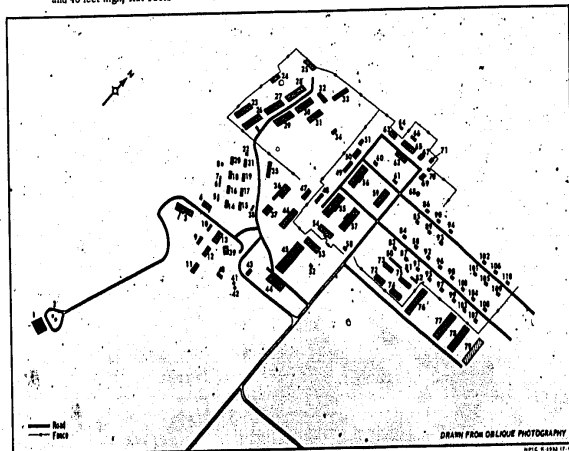


FIGURE 8. DETAILS OF THE SUPPORT AREA.

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- 5 Unidentified structure
- 6 Control building with switching equipment located just northeast, low pitched gable roof
- 7 Building 55 by 35 feet and 10 feet high, flat roof
- 8 Building 55 by 35 feet, probably gable roof
- 9 Lattice tower approximately 95 feet high.

## Launch Area

The only changes observed in this site since March 1964 have occurred in the launch area and have been previously reported, 2/ but the information is being repeated in this report for the convenience of the user. The launch area contains 59 launch positions and 10 control bunkers of which 12 launch positions and 2 control bunkers are within the fenced area that encompasses the triad. Excluding those elements in the triad area, there are 16 buildings or structures and 5 earthen revetments in the launch area. Detailed descriptions and mensural data follow (all item numbers are keyed to Figure 12).

- 10 Support building 95 by 30 feet, gable roof
- 11 Structure 35 by 20 feet
- 12 Support building 55 by 40 feet, gable roof
- 13 Three revetted structures, each approximately 50 feet long
- 14 Horseshoe-shaped revetment with walls 125, 65 and 100 feet in length, approximately 13 feet wide at the base and 8 feet high. Orientation of the revetment, based on its long axis, is
- 15 Horseshoe-shaped revetment with walls 150, 60, and 120 feet in length, approximately 13 feet wide at the base and an estimated 8 feet high. Orientation of the revetment, based on its long axis, is
- 16 Drive-through revetment with earthen walls constructed on opposite sides of the rib road. The walls are 365 and 340 feet in length, approximately 20 feet wide at the base and an estimated 20 feet high. Distance between walls is 60 feet and the orientation of the revetment, based on its long axis, is
- 17 Drive-through revetment with earthen walls constructed on opposite sides of the rib road. The walls are 295 feet long.

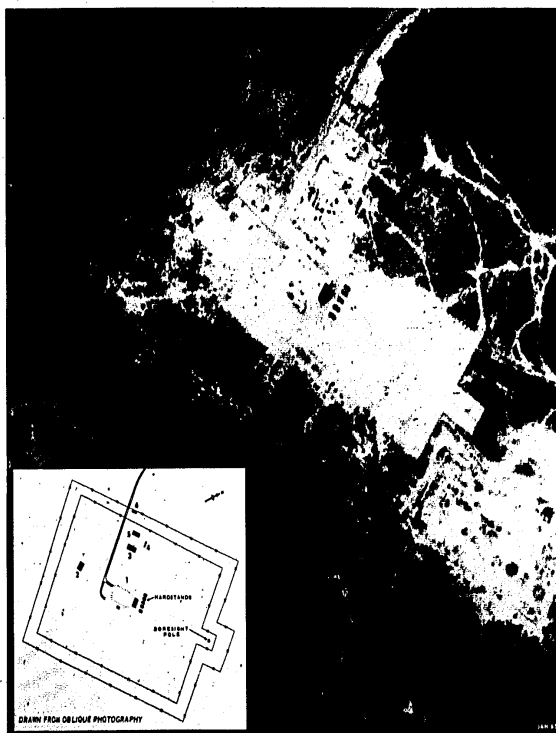
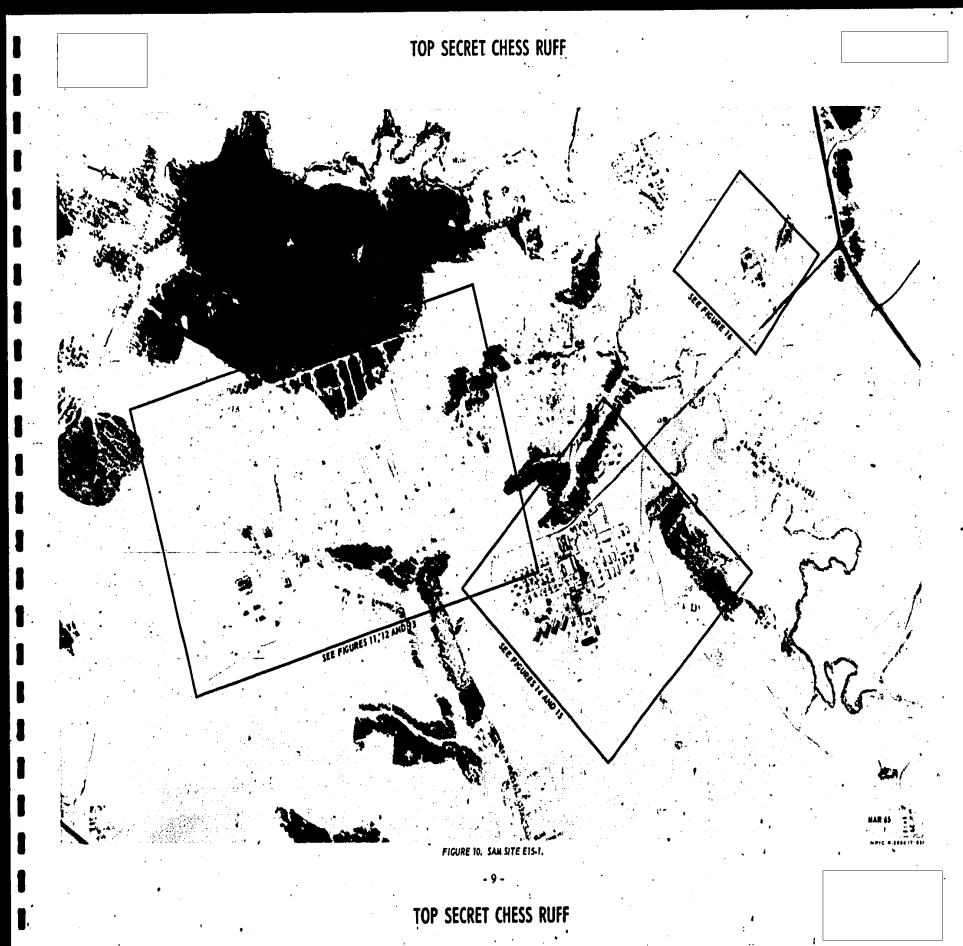
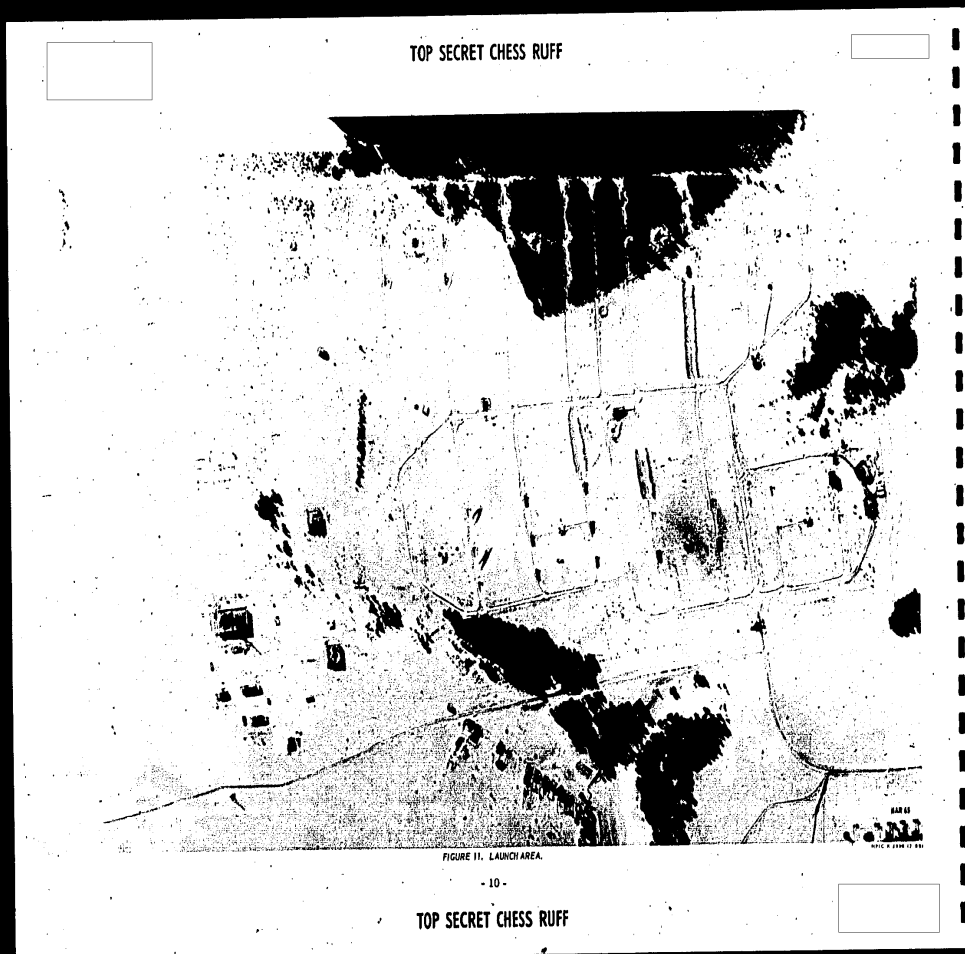
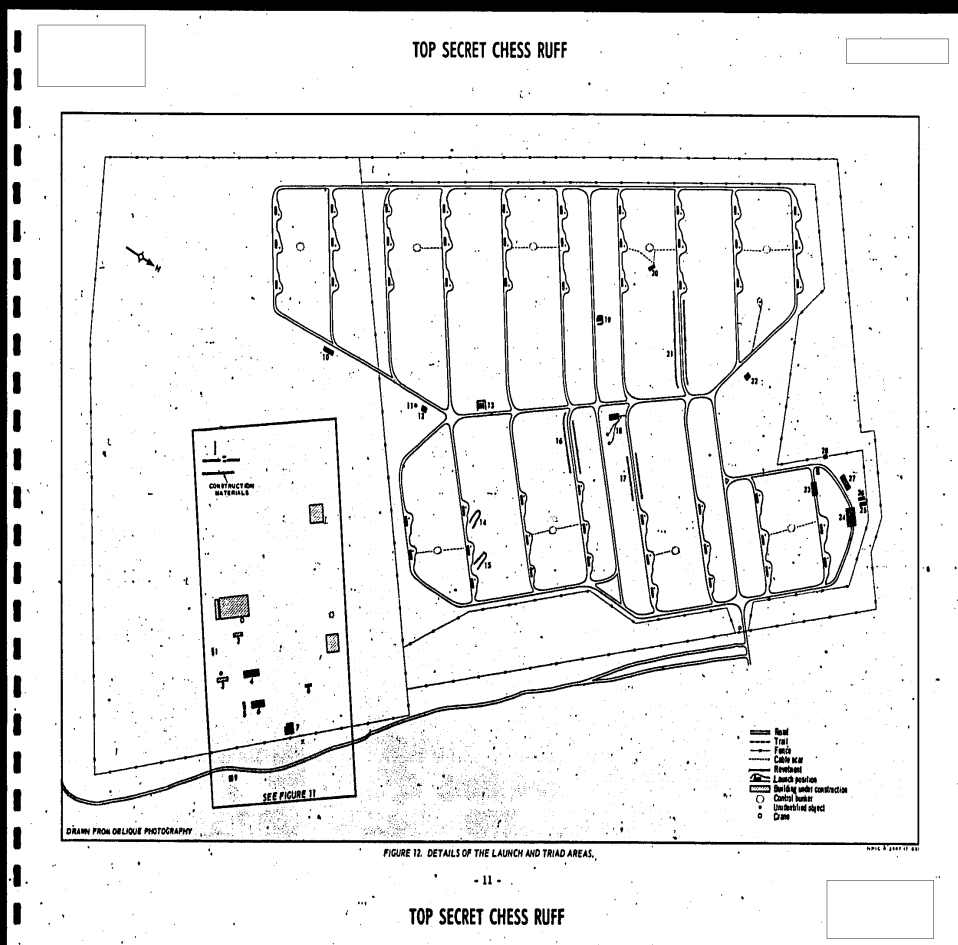


FIGURE 8. GUIDANCE AREA.

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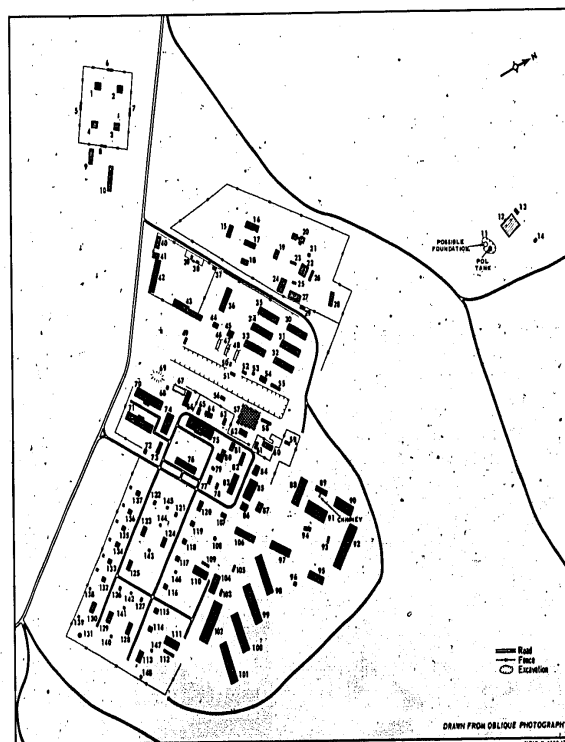


FIGURE 15. DETAILS OF THE SUPPORT AREA.

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at the base and an estimated [redacted] The distance between walls [redacted] and the orientation of revetment, based on its long axis, [redacted]

- 18 Support building 35 by 20 feet, gable roof
- 19 Revetted structure approximately 55 feet long
- 20 Support building 55 by 25 feet, gable roof
- 21 Drive-through revetment with earthen walls constructed on opposite sides of the rib road. The walls are 555 and 615 feet in length, approximately 15 feet wide at the base and an estimated 16 feet high. Orientation of the long axis of the revetment [redacted]
- 22 Support building 55 by 30 feet, flat roof
- 23 Probable drive-through structure 60 by 35 feet and approximately 45 feet high
- 24 Drive-through missile checkout building 75 by 45 feet, gable roof
- 25 Support building 50 by 20 feet, gable roof
- 26 Support building 45 by 25 feet, gable roof
- 27 Support building 120 by 50 feet, gable roof
- 28 Support building 25 by 20 feet, probably gable roof.

#### Support Area

[redacted] the first KH-7 coverage of the site, provided as previously reported, a count of the buildings within the support area and showed details not discernible on most coverages, 3/ but Figures 14 and 15 show the site as seen on [redacted]

There are 148 buildings in the support area, including 3 administration-type buildings, 43 dwelling units, and 102 miscellaneous structures. Buildings have gable roofs unless otherwise stated in the following detailed list (item numbers are keyed to Figure 15).

- 1-4 Storage buildings 40 by 25 feet and 20 feet high
- 5-8 Undifferentiated structures 50 by 10 feet and 5 feet high, probably flat roofs
- 9 Storage building 90 by 25 feet and 20 feet high
- 10 Storage building 135 by 30 feet and 20 feet high
- 11 Excavation containing a POL tank approximately 20 feet in diameter and the possible foundation for a second tank
- 12 Building under construction 110 by 95 feet, 2 walls visible



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- 13 Unidentified structure 35 by 30 feet
- 14 Unidentified structure 35 by 25 feet
- 15 Support building 90 by 20 by 10 feet high
- 16 Support building 100 by 35 feet
- 17 Support building 60 by 30 by 15 feet high
- 18 Support building 65 by 30 by 10 feet high
- 19 Unidentified building 40 by 25 by 10 feet high, stack at northwest corner
- 20 Possible batch plant 60 by 35 feet
- 21 Towerlike structure approximately 20 feet in diameter
- 22 Support building 75 by 35 by 10 feet high, annex on west side is 70 by 20 feet, both sections have gable roofs
- 23 Shed 35 by 20 by 10 feet high, flat roof
- 24 Support building 85 by 35 by 10 feet high
- 25 Unidentified structure 15 by 10 by 15 feet high
- 26 Probable shed 65 by 35 feet, flat roof
- 27 Support building 85 by 40 by 15 feet high
- 28 Support building 65 by 10 by 20 feet high with an extension 20 feet by approximately 10 feet
- 29 Unidentified structure 30 by 10 by 10 feet high
- 30-35 Barracks-type buildings 145 by 45 by 15 feet high
- 36 Barracks-type building 145 by 35 by 15 feet high
- 37-39 Probable sheds
- 40 Support building 15 by 10 by 10 feet high, probably gable roof
- 41 Support building 15 by 10 by 10 feet high, probably gable roof
- 42 Vehicle shed 195 by 20 by 15 feet high
- 43 Vehicle shed 205 by 40 feet, first level 15 feet high, second level 20 feet high
- 44 Support building 50 by 40 by 10 feet high
- 45 Support building 30 by 20 feet
- 46-48 Probable semi-circular structures 75 by 15 feet
- 49 Support building 30 by 15 by 5 feet high, probably gable roof
- 50 Unidentified structure 25 by 10 by 10 feet high
- 51 Support building 25 by 15 feet
- 52 Support building 30 by 15 feet
- 53 Unidentified structure 10 by 10 feet
- 54 Unidentified structure 35 by 35 feet
- 55 Support building 50 by 15 by 10 feet high

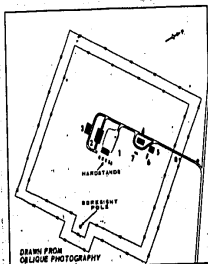
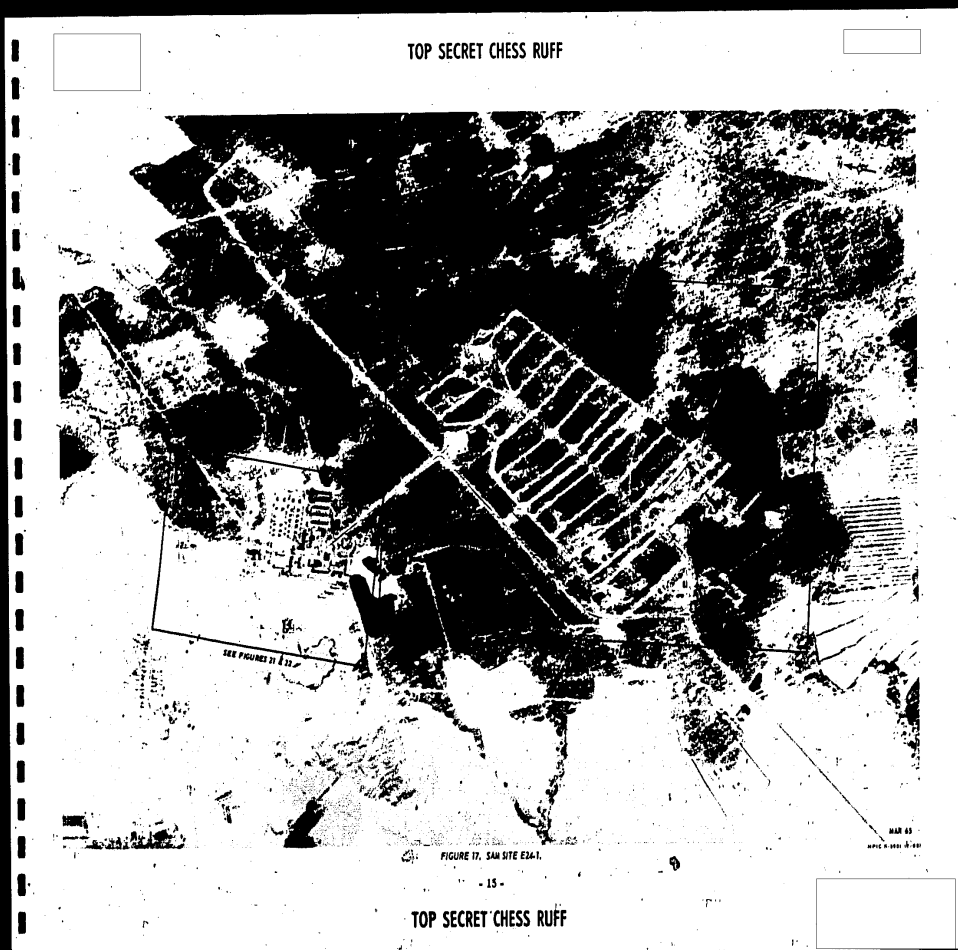


FIGURE 16. GUIDANCE AREA.



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FIGURE 18. TRIAD AREA.

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- 56 Support building 40 by 20 feet, probably gable roof
- 57 Open storage area with unidentified material
- 58 Support building 70 by 15 feet
- 59 Support building 25 by 15 by 15 feet high, probably gable roof
- 60 Support building 55 by 20 by 10 feet high, probably gable roof
- 61 Building 25 by 15 by 10 feet high
- 62 Support building 50 by 30 by 15 feet high
- 63 Support building 50 by 35 by 15 feet high
- 64 Unidentified building 50 by 30 by 10 feet high
- 65 Support building 50 by 20 feet
- 66 Support building 90 by 20 by 10 feet high
- 67 Semiburied structure 75 by 15 feet; 3 circular objects on south edge of roof
- 68 Support building 25 by 10 by 10 feet high, probably gable roof
- 69 Probable bunker 40 by 10 feet
- 70 Probable administration building 200 by 50 by 15 feet high
- 71 Probable administration building 180 by 55 feet
- 72 Probable guard post 30 by 15 by 15 feet high
- 73 Barracks 40 by 30 by 10 feet high
- 74 Barracks 115 by 45 by 20 feet high
- 75 Probable administration building 190 by 45 by 20 feet high
- 76 Barracks 140 by 25 feet
- 77 Support building 40 by 20 by 15 feet high
- 78 Support building 20 by 15 by 15 feet high, probably gable roof
- 79 Unidentified structure 15 by 10 feet
- 80 L-shaped building 55 by 35 by 30 feet high
- 81 Support building 25 by 20 by 15 feet high
- 82 Support building 45 by 20 by 10 feet high
- 83 Support building 75 by 35 by 20 feet high
- 84 Support building 60 by 30 by 20 feet high
- 85 Support building 110 by 45 feet
- 86 Support building 40 by 35 feet
- 87 Support building 55 by 40 by 20 feet high
- 88 Support building 155 by 40 by 15 feet high, flat roof
- 89 Probable thermal plant 80 by 25 by 25 feet high; a stack at northwest corner of building

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- 90 Support building 120 by 50 feet and 35 feet high, flat roof
- 91 Unidentified building 135 by 60 by 15 feet high, flat roof. At the east end of the roof is what appears to be an oblate spheroidal structure 50 by 40 feet, which has as its approximate center a light reflective object that has some height
- 92 Apartment-type building 250 by 50 feet and 30 feet high, flat roof
- 93 Unidentified structure 35 by 15 by 10 feet high, probably gable roof
- 94 Unidentified structure 50 by 20 by 15 feet high
- 95 Support building 100 by 45 by 15 feet high, flat roof
- 96 Building 25 by 25 by 15 feet high, probably flat roof
- 97 Bilevel support building 135 by 40 feet; first level 15 feet high, second level 35 feet high
- 98-102 Apartment-type buildings 215 by 50 approximately 40 feet high, flat roofs
- 103 Support building 35 by 15 feet
- 104 Barracks-type building 90 by 35 by 20 feet high
- 105 Support building 25 by 10 feet, probably gable roof
- 106 Support building 140 by 45 feet; 85 foot center section is 25 feet high, the remainder is 10 feet high
- 107 Support building 35 by 25 by 15 feet high, probably flat roof
- 108 Probable storage tank 10 feet in diameter, approximately 15 feet high
- 109 Support building 55 by 15 by 15 feet high, probably gable roof
- 110 Barracks 80 by 30 feet
- 111 Barracks 85 by 45 feet
- 112 Support building 45 by 15 feet
- 113 Multifamily-type dwelling 60 by 25 feet
- 114-119 Single-family-type dwellings 30 by 25 feet
- 120 Multifamily-type dwelling 60 by 30 feet
- 121, 122 Single-family-type dwellings 30 by 25 feet
- 123-125 Multifamily-type dwellings 35 by 25 feet
- 126 Single-family-type dwelling 30 by 25 feet
- 127 Single-family-type dwelling 35 by 25 feet
- 128-130 Multifamily-type dwellings 60 by 25 by 10 feet high
- 131 Standtype 20 feet in diameter, approximately 50 feet high
- 132-137 Single-family-type dwellings 30 by 25 feet, with associated outbuildings
- 138-148 Probable outbuildings.

## Guidance Area

The guidance area is located northwest of the launch area and consists of a radar bunker, bore-sight pole, and 6 buildings. Brief descriptions and mensural data follow (all item numbers are keyed to Figure 16).

- 1 Radar bunker 230 by 80 feet, occupancy undetermined
- 2 Drive-through support building 75 by 60 feet, gable roof
- 3 Support building 65 by 40 feet, gable roof
- 4 Barracks-type building 70 by 35 feet, gable roof
- 5 Support building 55 by 55 feet, flat roof
- 6 Support building 55 by 35 feet, probably gable roof
- 7 Support building 35 by 20 feet, gable roof
- 8 Probable security building 25 by 20 feet, probably gable roof.

## MOSCOW SAM SITE E24-1

Site E24-1 (Figure 1) is located at 55-21-04N 36-29-27E, approximately 45 nm southwest of Moscow. The latest detailed NFIC report dealing with the site utilized photography available through July 1964. 1/ Since then the site has been observed, on 5 missions, with [redacted] presenting the first KH-7 photography of the site. Because of the larger scale photography (Figure 17), a number of additions have been noted that were not discernible on previous photography.

## Triad Area

Buildings a, b, and c appear externally complete on the visible sides in March 1965. Entrance to Building a is at the end of the building near Building d, and entrances to Buildings b and c are probably on the east as evidenced by track activity in mid-March 1965 (Figures 18-20).

In October 1964, slightly elevated rings that encircled the platforms on top of all the buildings were discernible. The rings on Buildings b and c [redacted] and the ring on Building a measured 95 feet in diameter. On photography of January 1965 a partially completed ring section 110 feet in diameter was observed on the ground adjacent to the southwest corner of Building a. Subsequent coverage of March 1965 [redacted] showed that this section had been emplaced on the ring on the roof of Building a. Two

smaller circular sections [redacted] had also been brought into the triad area. One was emplaced on the roof of Building b, and the other was positioned on the ground adjacent to the southwest corner of Building c. A circular object [redacted] was in position on the ground adjacent to the northwest corner of Building b. Large scale photography [redacted] revealed that a second circular section 110 feet in diameter had been moved into or assembled at the southwest corner of Building [redacted]. This ring section is in the same location as the partially assembled section seen on [redacted] photography. At Building b the circular object observed at the northwest corner of the building could now be identified as a circular cap. If the cap were positioned on top of Building b without the addition of other circular sections, the completed overall height would be approximately 90 feet. At Building c, the [redacted] section observed [redacted] photography remained in the same location. [redacted] Of photography of January 1965, the visible sides of Building d appeared externally complete. Entrance to the building is probably on the side adjacent to Building a.

The T-shaped building west-northwest of Building a had been earth banked during the period between October 1964 and January 1965. The entrance into the building is on the west side, into the higher bay opposite the intersection of the bar and stem. [redacted] unidentified equipment lay near the entrance to the structure.

The KH-7 photography also revealed that triple fencing encompassed the triad facility, 12 SA-1 launch positions, and 2 control bunkers. The fencing extended across the width of the launch area, thus allowing for construction of a second triad at a later date.

Additional buildings in the triad area are as follows (item numbers are keyed to Figure 20):

- 1 Support building 55 by 35 feet, gable roof
- 2 Support building 85 by 40 feet and 10 feet high, gable roof
- 3 Support building 100 by 45 feet and 20 feet high
- 4 Secured habitation 100 by 45 feet
- 5 Support building 155 by 65 feet and 20 feet high, flat roof
- 6 Thermal plant 70 by 30 feet and 30 feet high with a stack adjacent to the west wall.

TOP SECRET CHESS RUFF



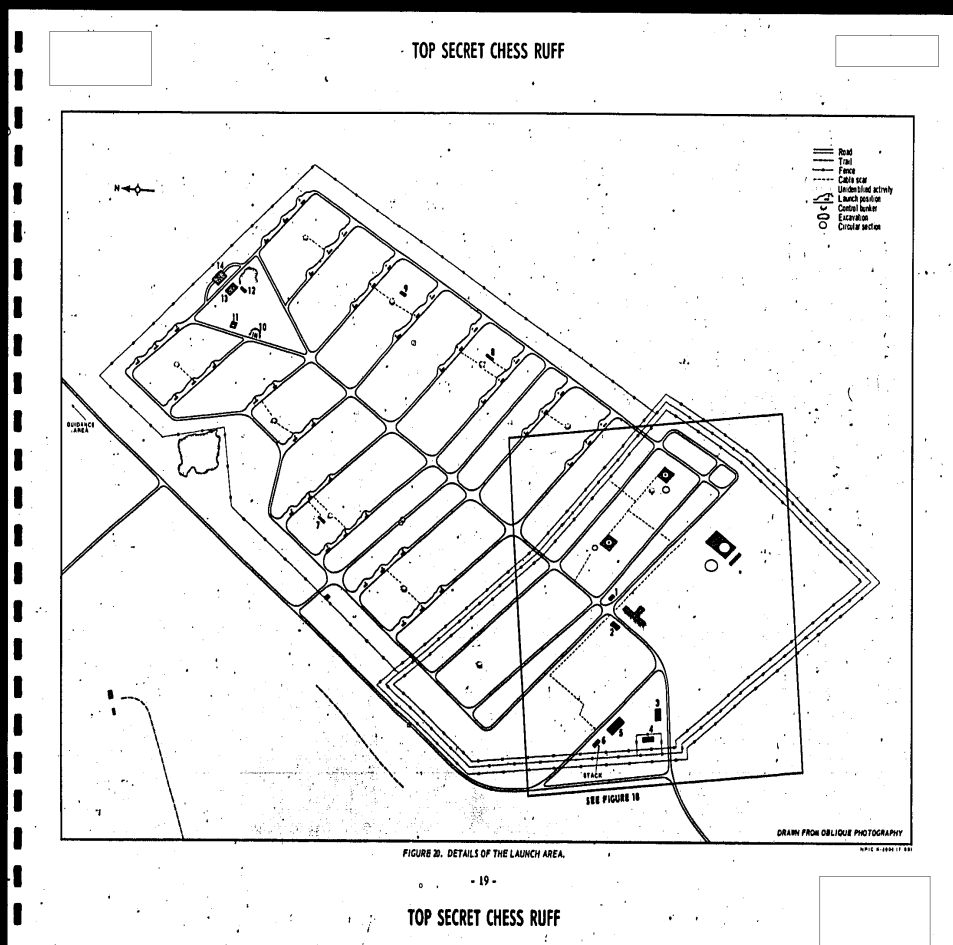
FIGURE 19. LAUNCH AREA.

- 18 -

TOP SECRET CHESS RUFF

25X1  
ZSAI

25X1



TOP SECRET CHESS RUFF



FIGURE 21. SUPPORT AREA.

- 20 -

TOP SECRET CHESS RUFF

25X1  
25X1

25X1





## TOP SECRET CHESS RUFF

## Launch Area

The launch area contains 60 launch positions and 10 control bunkers of which 12 launch positions and 2 control bunkers are located within the triple fenced area that encompasses the triad.

at positions 9B1 and 9B2 there were 2 rectangular objects measuring 100 by 15 and 105 by 20 feet. Later, the rectangular objects as such were not discernible, but there were indications of activity that cannot be explained.

Excluding the buildings located within the triple fenced area, there are 7 buildings located in the launch area. Detailed descriptions and mensural data follow (item numbers are keyed to Figure 20, which portrays the area as seen on

- 7 Support building 60 by 20 feet, gable roof
- 8 Support building 35 by 30 feet, probable gable roof
- 9 Support building 35 by 25 feet, gable roof
- 10 Revetted probable horizontal storage tanks
- 11 Support building 80 by 70 feet, probably gable roof
- 12 Support building 80 by 25 feet, gable roof
- 13 Support building 100 by 65 feet, gable roof
- 14 Drive-through missile check-out building 100 by 80 feet, gable roof.

## Support Area

permits a more accurate count of the buildings within the support area and provide details not discernible on other photography. There are 2 administration-type buildings, 43 dwelling units, and 78 support buildings and miscellaneous structures (Figure 21). Buildings have gable roofs unless otherwise stated in the following detailed list (item numbers are keyed to Figure 22 which portrays the area as seen on

- 1 Multifamily-type dwelling 50 by 25 feet and 10 feet high
- 2-6 Probable outbuildings
- 7-10 Multifamily-type dwellings 45 by 25 feet and 10 feet high
- 11-13 Probable outbuildings
- 14-17 Single-family-type dwellings 35 by 25 feet and 10 feet high

- 18 Multifamily-type dwelling 40 by 25 feet
- 19-22 Probable outbuildings
- 23-28 Single-family-type dwellings 35 by 25 feet and 10 feet high
- 29-32 Probable outbuildings
- 33-42 Single-family-type dwellings 35 by 25 feet and 10 feet high
- 43-47 Probable outbuildings
- 48 Support building 195 by 40, flat roof
- 49 Bilevel support building 125 by 40 feet, first level 15 feet high and flat roofed, second level 20 feet high and gable roofed
- 50 Multifamily-type dwelling 70 by 35 feet and 10 feet high, hip roof
- 51 Support building 55 by 20 feet
- 52, 53 Multifamily-type dwellings 70 by 35 feet and 20 feet high, hip roofs
- 54 Support building 70 by 15 feet
- 55 Multifamily-type dwelling 75 by 30 feet and 10 feet high, hip roof
- 56 Multifamily-type dwelling 70 by 35 feet and 20 feet high, hip roof
- 57 Support building 25 by 15 feet, roof configuration undetermined

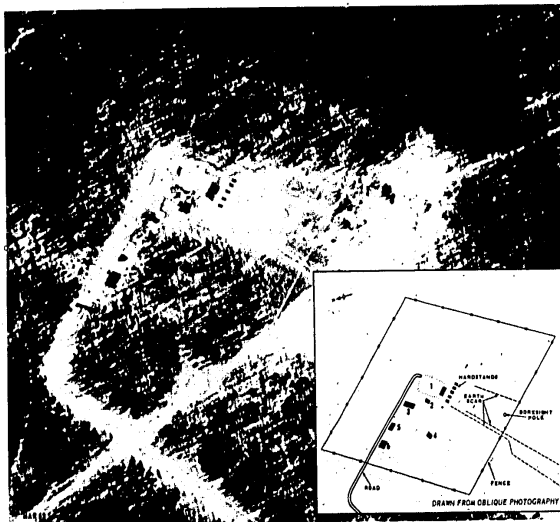


FIGURE 21. GUIDANCE AREA.

## TOP SECRET CHSS RUFF

- |        |  |          |                                 |     |  |
|--------|--|----------|---------------------------------|-----|--|
| 58     | L-shaped probable support building 105 by 70 by 50 feet                    | 100      | Support building 15 by 10 feet  | 108 | Support building 45 by 25 feet                       |
| 59-63  | Apartment-type buildings 215 by 45 feet and 40 feet high, flat roofs       | 101      | Support building 40 by 20 feet  | 109 | Support building 35 by 30 feet                       |
| 64     | Support-type building 45 by 20   | 102, 103 | Support buildings 30 by 15 feet | 110 | Support building 35 by 15 feet                       |
| 65     | Probable shed 100 by 20, flat roof   | 104      | Support building 40 by 35 feet  | 111 | Support building 30 by 15 feet, flat roof            |
| 66, 67 | Unidentified structures, roof configuration and measurements undetermined  | 105      | Support building 30 by 25 feet  | 112 | Support building 70 by 15, probably flat roof        |
| 68     | Probable shed 60 by 15 feet, flat roof                                     | 106      | Support building 90 by 30 feet  | 113 | Support building 35 by 25 feet, probably gable roof  |
| 69     | Standpipe  | 107      | Support building 105 by 45 feet | 114 | Possible vehicle shed 60 by 20 feet and 10 feet high |
| 70     | Support building 50 by 15 feet, probably gable roof                        |          |                                 |     |  |
| 71     | Support building 40 by 40 feet   |          |                                 |     |  |
| 72     | Thermal plant 80 by 20 feet, flat roof with stack on east side of building |          |                                 |     |  |
| 73     | Apartment-type building 125 by 40 feet and 30 feet high, flat roof         |          |                                 |     |  |
| 74     | Support building 130 by 65 feet and 10 feet high                           |          |                                 |     |  |
| 75     | Support building 165 by 40, flat roof                                      |          |                                 |     |  |
| 76     | Support building 290 by 60 feet and 10 feet high, flat roof                |          |                                 |     |  |
| 77     | Probable building, partly obscured by trees                                |          |                                 |     |  |
| 78     | Support building 65 by 15 feet, probably gable roof                        |          |                                 |     |  |
| 79     | Support building 40 by 15 feet, probably gable roof                        |          |                                 |     |  |
| 80     | Unidentified structure, measurements undetermined                          |          |                                 |     |  |
| 81-84  | Barrack-type buildings 140 by 40 feet and 10 feet high                     |          |                                 |     |  |
| 85     | Support building 45 by 15 feet   |          |                                 |     |  |
| 86     | Support building 100 by 40 feet and 10 feet high                           |          |                                 |     |  |
| 87     | Apartment-type building 250 by 55 feet and 30 feet high, flat roof         |          |                                 |     |  |
| 88, 89 | Unidentified structures  |          |                                 |     |  |
| 90     | Support building 130 by 50 feet and 25 feet high, flat roof                |          |                                 |     |  |
| 91, 92 | Administration-type buildings 170 by 50 feet                               |          |                                 |     |  |
| 93     | Support building 25 by 10 feet, probably gable roof                        |          |                                 |     |  |
| 94     | L-shaped support building 115 by 40 feet                                   |          |                                 |     |  |
| 95     | Support building 115 by 55 feet, flat roof                                 |          |                                 |     |  |
| 96     | Support building 80 by 15 feet, probably gable roof                        |          |                                 |     |  |
| 97     | Support building 180 by 50 feet and 10 feet high                           |          |                                 |     |  |
| 98     | Support building 145 by 40 feet and 10 feet high                           |          |                                 |     |  |
| 99     | Support building 80 by 30 feet and 10 feet high                            |          |                                 |     |  |



FIGURE 24. SAN SITE EX-1.

## TOP SECRET CHESS RUFF

- 115 Support building 35 by 35 feet and 10 feet high, flat roof
- 116 Support building 135 by 35 feet
- 117 Support building 140 by 40 feet
- 118 Support building 65 by 35 feet and 5 feet high
- 119 Support building 15 by 10 feet, probably flat roof
- 120 Support building 15 by 10 feet, flat roof
- 121 Probable shed 130 by 25 feet.

## Guidance Area

The guidance area is located 4,400 feet northeast of the launch area and consists of a radar bunker, borelight pole, and 5 support buildings. Brief descriptions and mensural data follow (all item numbers are keyed to Figure 23 which shows the area as seen on [redacted]).

- 1 Radar bunker 185 by 105 feet, occupancy undetermined
- 2 Support building 35 by 15 feet, flat roof
- 3 Barracks-type building 75 by 30 feet, gable roof
- 4 Support building 40 by 25 feet, gable roof
- 5 Support building 60 by 35 feet, gable roof
- 6 Support building 60 by 45 feet, probably gable roof.

## MOSCOW SAM SITE E33-1

This site is located at 56-20-00N 36-48-27E, approximately 45 nm northwest of Moscow. The latest detailed NPIC report dealing with the site 2/ utilized photography available through October 1964. Since then the site has been observed on 2 missions [redacted].

The photography of January 1965 is the better of the 2 missions; however, only monoscopic coverage was available (Figure 24).

## Triad Areas

A number of changes were observed in Triad 1. The 110-foot circular structure seen on the ground adjacent to Building a in October had been emplaced on the roof, encompassing the elevated platform (Figure 24). An additional circular section 110 feet in diameter was on the ground at the west side of Building a (item 1). At Building b, the circular structure seen on the ground in October had been emplaced on the roof of Building b. Review of the October cov-

erage showed that a possible convex cap for the top of this structure was probably present at that time and that by January 1965 it had possibly been emplaced on top of [redacted] circular structure.

No significant changes were observed at the second triad, snow cover obscuring most of the ground features from photography of both missions, but it was possible to observe that the T-shaped building had been partially earth banked. Complete descriptions and measurements for the structures follow (item numbers are keyed to Figure 24).

- 1 Circular section [redacted]
- 2 Thermal plant 140 by 35 feet, gable roof
- 3 Probable security building 55 by 35 feet, gable roof
- 4 Support building 150 by 35 feet, gable roof
- 5 Suspect substation 150 by 25 feet, low pitch gable roof
- 6 Support building 85 by 30 feet, flat roof
- 7 Probable foundation for Building a, second triad, 225 by 140 feet; 2,030 feet from Building a in Triad 1
- 8 Clearing 320 by 240 feet
- 9 Clearing 210 by 155 feet.

## Launch Area

The launch area contains 60 launch positions and 10 control bunkers of which 12 launch positions and 2 control bunkers are located within the fenced area that encompasses the triad areas. Excluding the buildings located within the fenced area, there are 8 buildings and 6 earthen revetments scattered throughout the launch area. Detailed descriptions and mensural data follow (item numbers are keyed to Figure 24).

- 10 Support building 50 by 25 feet, gable roof
- 11 U-shaped revetment 185 by 215 feet with walls 20 feet wide at the base and [redacted]
- Orientation of the revetment, based on its long axis, [redacted]
- A smaller horseshoe-shaped revetment is across the junction of the rib roads
- 12-14 Horseshoe-shaped revetments, dimensions undetermined
- 15 Support building 40 by 35 feet, gable roof
- 16 Support building 40 by 30 feet, gable roof

- 17 Drive-through missile checkout building 95 by 70 feet, gable roof
- 18 Support building 120 by 40 feet, gable roof
- 19 Support building 55 by 50 feet, gable roof
- 20 Support building 50 by 40 feet, probably gable roof
- 21 Horseshoe-shaped revetment, dimensions undetermined
- 22 Support building 45 by 40 feet, probably flat roof.

## Guidance and Support Areas

Site E33-1 had not been covered by KII-7 photography by March 1965, therefore measurements of precision comparable to that at the other sites could not be made for the support and guidance areas at E33-1.

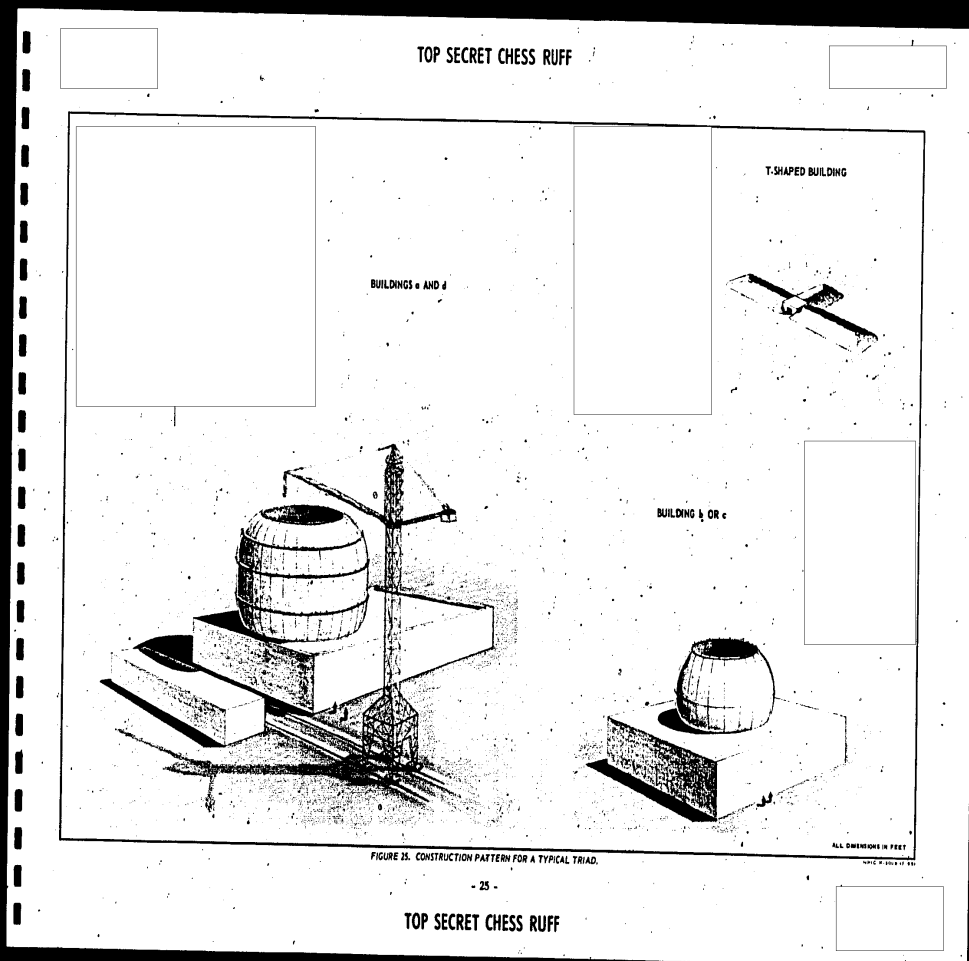
## SYNTHESIS

A summary of developments at the four SA-1SAM sites where possible AMM-associated electronic facilities have been observed makes it possible to establish the construction sequence and the similarities between the buildings at the 4 sites. In addition to measurements from continuing KII-4 coverage, the information gained from KII-7 photography contributes to detailed measurements which have been used to establish average dimensions for the major buildings that make up such a possible AMM-associated facility (Figure 25).

Because of the varying stages of construction at the sites, the description that follows may not be applicable to any one site. Table 1 gives details of construction chronology.

Until October 1964, the possible AMM-associated electronic facilities consisted of 3 buildings arranged in a triangle, designated a "triad." In October 1964 a probable second triad was observed under construction at SAM Sites E05-1 and E33-1. The facilities appear to be duplicates of the original triads and therefore the construction pattern may well apply for these facilities also.

Building a, the largest building of the triad, measures 235 by 140 feet and is 35 feet high (Figure 25). Roof of the building is flat, with probable parapets on all 4 sides, and the exterior walls appear solid, having no windows on the visible sides. There is an elevated platform at the end of the building farthest from Moscow. It is enclosed on all sides



## TOP SECRET CHESS RUFF

Table 1. Construction Chronology

SITE								
<b>P25-1</b>								
Triad 1	External complete	External complete	No apparent change	No apparent change	No apparent change	No apparent change	Cloud covered	Not covered
Bldg a	External complete	External complete	No apparent change	No apparent change	No apparent change	No apparent change	Cloud covered	Not covered
Bldg b	External complete	External complete	No apparent change	No apparent change	No apparent change	No apparent change	Cloud covered	Not covered
Bldg c	External complete	External complete	No apparent change	No apparent change	No apparent change	No apparent change	Cloud covered	Not covered
Bldg d	External complete	External complete	No apparent change	No apparent change	No apparent change	No apparent change	Cloud covered	Not covered
T-shaped	External complete	External complete	No apparent change	No apparent change	No apparent change	No apparent change	Cloud covered	Not covered
Triad 2	Not present	Clearing 400 x 170 ft	Excavation 180 ft sq	Construction continues	No apparent change	No apparent change	Cloud covered	Not covered
Bldg a	Not present	Clearing 125 x 85 ft	Construction continues	Construction continues	No apparent change	No apparent change	Cloud covered	Not covered
Bldg b	Not present	Clearing 125 x 115 ft	Construction continues	Construction continues	No apparent change	No apparent change	Cloud covered	Not covered
Bldg c	Not present	Not present	Not present	Not present	No apparent change	No apparent change	Cloud covered	Not covered
Bldg d	Not present	Not present	Not present	Not present	No apparent change	No apparent change	Cloud covered	Not covered
<b>P25-2</b>								
Triad 1	External complete	No apparent change	Cloud covered	No apparent change	No apparent change	Not covered	No apparent change	No apparent change
Bldg a	External complete	No apparent change	Cloud covered	No apparent change	No apparent change	Not covered	No apparent change	No apparent change
Bldg b	Incomplete	No apparent change	Cloud covered	No apparent change	No apparent change	Not covered	No apparent change	No apparent change
Bldg c	Incomplete	No apparent change	Cloud covered	No apparent change	No apparent change	Not covered	No apparent change	No apparent change
Bldg d	Incomplete	No apparent change	Cloud covered	No apparent change	No apparent change	Not covered	No apparent change	No apparent change
T-shaped	No construction; bldg materials here since Feb 64	No apparent change	Cloud covered	No apparent change	No apparent change	Not covered	No apparent change	No apparent change
Triad 2	Not present	Not present	Cloud covered	Not present	Not present	Not covered	Not present	Not present
<b>P25-3</b>								
Triad 1	Identification only	External complete; 85 ft ring on roof	Cloud covered	Not covered	Not covered	External complete; 110 ft ring on ground	External complete; 110 ft ring on roof	2d ring, 110 ft, on ground
Bldg a	Identification only	External complete; 86 ft ring on roof	Cloud covered	Not covered	Not covered	External complete	External complete; 86 ft ring on roof	No apparent change
Bldg b	Identification only	External complete; 86 ft ring on roof	Cloud covered	Not covered	Not covered	External complete	External complete; 86 ft ring on ground	No apparent change
Bldg c	Identification only	External complete; 86 ft ring on roof	Cloud covered	Not covered	Not covered	External complete	External complete; 86 ft ring on ground	No apparent change
Bldg d	Identification only	External complete	Cloud covered	Not covered	Not covered	External complete	No apparent change	No apparent change
T-shaped	Identification only	External prob complete	Cloud covered	Not covered	Not covered	Bldg earth mounded	No apparent change	No apparent change
Triad 2	Not present	Not present	Cloud covered	Not covered	Not present	Not covered	Not present	Not present
<b>P25-4</b>								
Triad 1	Cloud covered	110 ft ring on roof; 110 ft ring on ground	Cloud covered	Cloud covered	Poss 3d ring on roof; poss cap on ground	Not covered	No apparent change, haze	Not covered
Bldg a	Cloud covered	68 ft ring on roof	Cloud covered	Cloud covered	Poss cap on roof	Not covered	No apparent change, haze	Not covered
Bldg b	Cloud covered	68 ft ring on roof	Cloud covered	Cloud covered	No apparent change	Not covered	No apparent change, haze	Not covered
Bldg c	Cloud covered	External prob complete	Cloud covered	Cloud covered	No apparent change	Not covered	No apparent change, haze	Not covered
Bldg d	Cloud covered	External prob complete	Cloud covered	Identification only	No apparent change	Not covered	No apparent change, haze	Not covered
T-shaped	Cloud covered	External prob complete	Cloud covered	Identification only	No apparent change	Not covered	No apparent change, haze	Not covered
Triad 2	Cloud covered	Prob foundation	Cloud covered	No apparent change	No apparent change	Not covered	No apparent change, haze	Not covered
Bldg a	Cloud covered	225 x 140 ft	Cloud covered	No apparent change	No apparent change	Not covered	No apparent change, haze	Not covered
Bldg b	Cloud covered	Clearing 200 x 240 ft	Cloud covered	No apparent change	No apparent change	Not covered	No apparent change, haze	Not covered
Bldg c	Cloud covered	Clearing 210 x 155 ft	Cloud covered	No apparent change	No apparent change	Not covered	No apparent change, haze	Not covered
Bldg d	Cloud covered	Not present	Cloud covered	Not present	Not present	Not covered	Not present	Not covered

## TOP SECRET CHESS RUFF

and is 35 feet square. The shaft of the elevated platform extends through the roof to a height of 25 feet and is surrounded by a somewhat wider opening in the roof that creates a collar which possibly is sealed by a flexible material. The platform is the pedestal for a piece of electronic equipment, and the collar may be intended to eliminate the transmission of vibrations from the building to the platform.

After the roof of Building A has been completed, a low profile ring, 95 feet in diameter, has been placed to en-

compass the elevated platform. Later in the construction cycle, a circular structure has been seen on the ground adjacent to the building. It is constructed from a series of vertical panels of unknown type of rigid material that give it a wooden barrel appearance. The panels possibly are bonded or otherwise joined on the ground at the site. The circular structure is 95 feet in diameter at the base, and widens to 110 feet at the top.

When assembled, the structure is emplaced on or over

the low-profile ring encompassing the platform, and its top appears slightly higher than that of the platform. Later, a second circular section, a uniform 110 feet in diameter, is emplaced on the first section. A third section, 110 feet wide at the base, is then placed on the second section. The third section tapers to a 63-foot opening which probably will be capped later in the construction cycle. In March 1965, no electronic equipment had been seen on the elevated platform



FIGURE 26. DOG HOUSE SITE.

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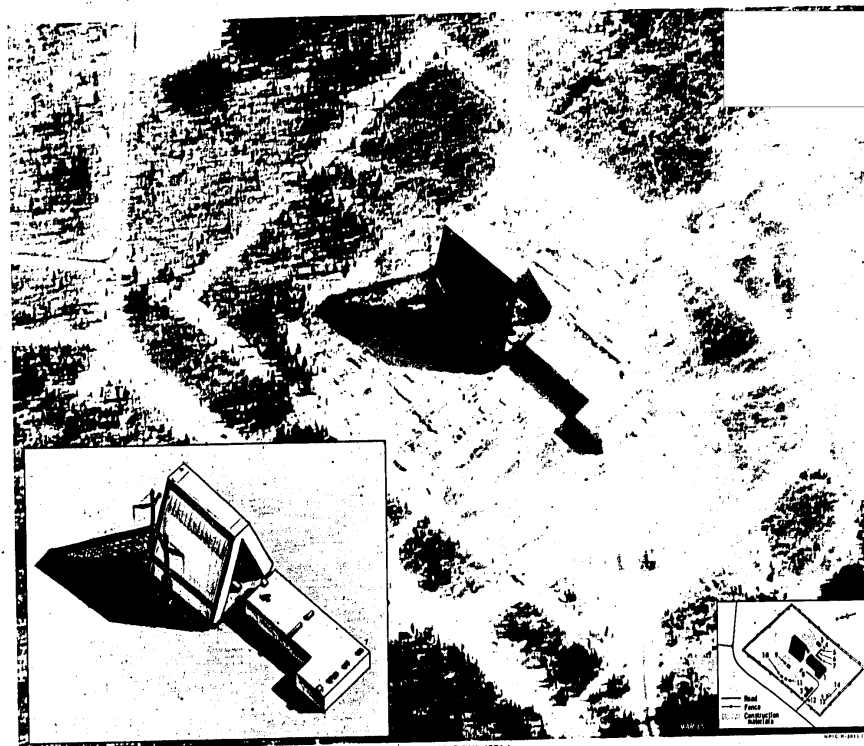
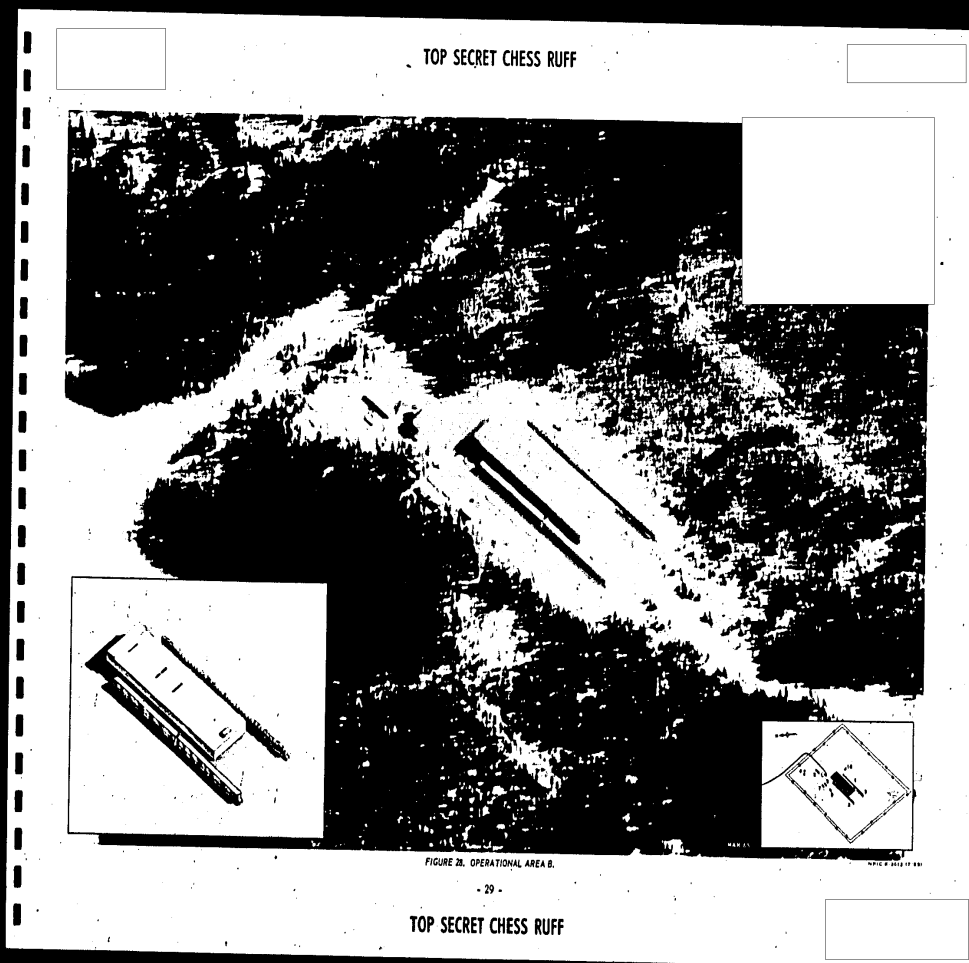


FIGURE 21. OPERATIONAL AREA A.

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25X1  
25X1

25X1

25X1



## TOP SECRET CHESS RUFF

nor had the circular structure been completely enclosed on any Building a.

The construction procedure for the 2 smaller triad buildings is similar to that described for the larger building. Buildings b and c are smaller (120 by 105 feet and 35 feet high), the diameter of the ring encompassing the platform is [redacted] and only one upright circular section is set on the

ring. This section widens from [redacted] at the base to a maximum diameter of 68 feet. At SAM Site E33-1 in March 1965, a dome-shaped capping section had been emplaced atop the circular structure. The exterior of the building had been completed at that site.

Two other buildings can be directly related to the possible AMM-associated electronic facility: A T-shaped building, and Building d, which is located adjacent and parallel to Building a, on the side farthest from Moscow.

The T-shaped building is 320 by 125 feet and 30 feet wide. Earlier photography showed that it was constructed in 3 sections, with the intersection of the stem and bar having a bay section 40 feet square and approximately 5 feet higher than the adjacent roof level. A T-shaped building has been constructed at sites E05-1, E24-1 and E33-1; material for a probably similar building has been identified at E15-1, but work had not commenced by March 1965. At Site E24-1, the building had been earth banked, with the higher bay section protruding slightly above the banked earth. The entrance probably is into this bay section. T-shaped buildings are unique to the Moscow facilities, no similar buildings having been identified at Sary-Shagan Antimissile Test Center (SSATC) by March 1965.

Building d, normally associated with the triad facility, is 140 by 30 feet and 20 feet high. It is located adjacent and parallel to triad Buildings a, at the end farthest from Moscow. Ditching has been observed connecting Building d with Building a. Buildings comparable to Building d have been found at all 4 of the triad facilities at SSATC.

SUSPECT AMM PHASED-ARRAY  
RADAR

## DOG HOUSE

The suspect AMM phased-array radar site (DOG HOUSE) is located at 55-29-50N 36-41-10E, 7 nm northwest of Naro-Forninsk and 35.7 nm west-southwest of Moscow. The latest detailed report on the site was based on photography available through July 1964. 1/ Since then, the site has been photographed on 4 missions, one of which (Figure 26) was the first K11-7 coverage of the site since April 1964.

## Operational Area A

Construction on the DOG HOUSE continued in March 1965, and considerable progress was noted at the north-northwest face of the radar. Photography obtained from [redacted] revealed that the vertical mullions of the south-southeast face were still exposed and that the placement of facing material had not begun. Measurements of the height, width, slant height of the faces (inset, Figure 27) are the same as previously published; 2/ however the current con-



FIGURE 26. SUPPORT AREA A.

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TOP SECRET CHESS RUFF

## TOP SECRET CHESS RUFF

struction status is shown from photography of March 1965. Light-toned facing material has been applied across 358 feet of the north-northwest face and approximately 260 feet up the face, but a 25-foot gap across the face near the bottom divides the facing material into 2 sections, the lower extending [ ] to the gap and the upper extending [ ] above it. The gap may be a temporary construction feature that provides easy access to the interior and exterior of the radar.

In addition to the light-toned facing material, a second type of material, translucent in appearance, covers an area [ ] near the top of the radar. Vertical striations (possibly the vertical mullions) are visible through the material, which may constitute a temporary environmental covering. Two large cranes, one of which is a rail-mounted gantry crane, remain in the area, one positioned adjacent to the west side of the radar and the gantry crane located on the north side where it is being used in affixing the facing material on the north-northwest face. The lack of visible scaffolding on the outside of the structure may indicate that the material is being secured from within the radar.

The control building (item 1), on the west side of the radar, appeared externally complete in March 1965. The long section of the L-shaped building measures 560 by 175 feet, the base is 275 by 165 feet, and overall height is 65 feet. The building is of masonry construction, and no entrance or opening was observed on the sides visible on March 1965 photography. On the roof, 7 structures ranging in size [ ]

[ ] were visible and may be related to such internal building functions as the environmental system, elevator shaft, or stairwells.

North of the control building there is a T-shaped building whose stem is 105 feet by 45 feet and whose bar is 335 feet by 45 feet (item 2). The building was under construction in July 1964 but had been completed and earth banked by March 1965, recalling a similar construction procedure observed at the T-shaped building in the triad area of SAM Site E24-1. As at that site, the entrance into the building is into the high-bay section opposite the intersection of the bar and stem of the T.

A large quantity of bulky material is stored in the open on both sides of the radar, and 2 traverse cranes are apparent in the open storage area on the north side. A number of buildings, some of which probably are temporary construction buildings, are located within the double-fenced area.

Complete descriptions and mensural data for these structures follow (item numbers are keyed to Figure 27).

- 3 Shed 100 by 70 feet, flat roof
- 4 Shed 60 by 20 feet, flat roof
- 5 Support building 100 by 40 feet, gable roof
- 6 Probable shed 75 by 20 feet, probably flat roof
- 7 Shed 270 by 45 with a 75- by 20-foot extension on east end, flat roof
- 8 Support building 110 by 30 feet, flat roof
- 9 Probable shed 60 by 25 feet, flat roof
- 10 Probable shed 35 by 15 feet and 10 feet high, flat roof
- 11 Support building 70 by 20 feet and 15 feet high, flat roof
- 12 L-shaped probable security building located inside fence line at road entrance into area; the base is 50 by 25 feet and the stem is 40 by 25 feet
- 13 Support building 75 by 20 feet and 15 feet high, flat roof
- 14 Support building 65 by 30 feet, flat roof, with a mast on south side of building.

## Operational Area B

Operational Area B is located 7,500 feet west-southwest of Operational Area A. On the KH-7 coverage of March 1965, a number of significant details were noted for the first time. Situated within the double-fenced area are a large probable control building and 2 suspect antennas, one of which is in a very early stage of construction (Figure 28).

The probable control building is rectangular, 660 feet long by 200 feet wide, with the roof stepped at the east end (item 1). Both portions of the roof are flat; the longer section is 50 feet high but a 40-foot section at the east end is 55 feet high. The building is of masonry construction and appears externally complete. No windows or entrances were observed; however, a large section of the north wall of the building is obscured by the suspect antenna.

Five structures of varying sizes ranging from 55 by 5 feet to 25 by 25 feet are positioned on the roof of the building and, like the structures observed on the control building in Operational Area A, are probably associated with internal building features.

Flanking the probable control building on the north and south sides at a distance of 60 feet are 2 suspect antennas

under construction. The northern suspect antenna (item 2) is probably in the mid-to-late stage of construction. This structure, which had previously been reported as a wall, [ ] 20 feet wide [ ]. It is divided into 2 equal sections [ ] and separated by [ ] compartment whose roof line protrudes an undetermined height above the adjoining roof sections. Located on the west end of the suspect antenna is a low-profile 20- by 20-foot annex whose function is undetermined. The pitched roof of the suspect antenna is slanted down toward the probable control building at an angle estimated [ ]

The north face or wall of the suspect antenna is hidden in deep shadow, and the lack of stereoscopic coverage on [ ] prohibits determination of the exact configuration of the face or wall. On this photography, however, the roof of the building appears to project beyond what may be a slanted face or wall. Any angle in excess of 10 degrees from the vertical would have no masking problem from the trees (average height 40 feet) which are 210 feet north of the suspect antenna. The 2 suspect antennas and the probable control building are located on the highest knoll in the area.

Review of earlier coverages revealed that the roof of the northern suspect antenna was constructed from west to east and that a gap in the roof line corresponding to the center compartment was noted on the July 1965 photography. At that time, the appearance of the suspect antenna indicated that the roof might be centered over a row of possibly vertical members (the members appear dark-toned on the photography). The center compartment, therefore, was completed between July and October 1964.

The southern suspect antenna (item 3) was in a very early stage of construction in March 1965 and consisted of a row of vertical members spaced approximately 20 feet apart and extending [ ]. An undetermined type of material had been draped on the vertical members, creating a screen. These members are probably an integral part of the suspect antenna and the draping of material over them may be only a temporary environmental covering. Overall length of the row of vertical members and the similar alignment in relation both to the probable control building and the suspect antenna on the north side indicate that the south structure will probably

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have the same configuration as the one on the north.

In March 1965, storage of bulky material was noted just north of the suspect antenna under construction. The 2 previously reported tanks, 4/ under construction in July 1964 (item 4) in the northeast corner of the fenced area, had been completed and earth covered by October 1964. Also located within the fenced area are 6 structures, some of which are probably temporary construction facilities. Complete descriptions and mensural data for the structures follow (item numbers are keyed to Figure 28, showing the site as seen on [redacted]).

- 5 Support building 135 by 30 feet and probably flat roof
- 6 Unidentified structure, approximately 125 by 70 feet
- 7 Support building 115 by 40 feet, gable roof
- 8 Probable shed 135 by 30 feet with an 85- by 10-foot annex on the north side, flat roof
- 9 Support building 60 by 25 feet, probably flat roof
- 10 Probable shed 65 by 40 feet, flat roof.

Although it cannot be equated at this time with known Soviet antennas, the northern structure in Operational Area B is considered a suspect antenna for the following reasons:

- 1) The orientation of the northern structure and the north face of the DOG HOUSE is identical; (construction of vertical members for the southern structure indicates that it will have the same orientation as the southern face of the DOG HOUSE);
- 2) Construction chronology of Operational Area A and Operational Area B is parallel;
- 3) Priority evidently was given to construction of the north faces of the DOG HOUSE and the northern structure in Operational Area B; and
- 4) Visible configuration of the northern structure is consonant with such a function (length, width, division of the structure into 2 equal sections, pitch of the roof toward the probable control building, and the appearance of the north face or wall).

## Support Area A

Support Area A is located 5,125 feet northwest of Operational Area A and 4,460 feet north-northeast of Operational Area B, and it is connected by road to both. The area is divided into 2 groups of buildings comprising a total of 66.

Complete descriptions and mensural data for buildings or structures follow (item numbers are keyed to Figure 29, which portrays the area as seen in March 1965, [redacted]).

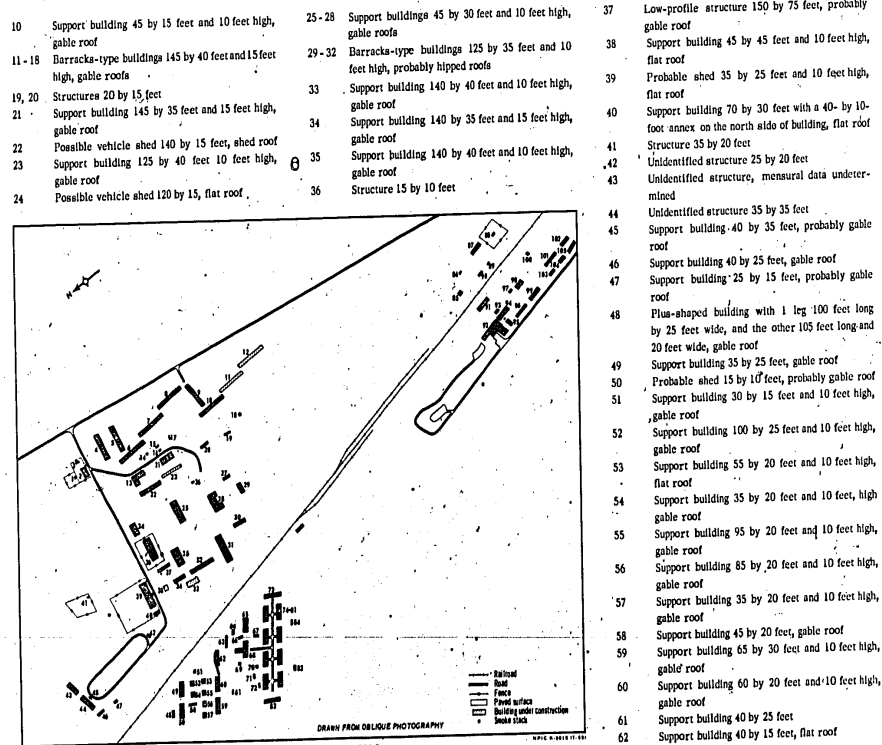
- 1 Support building 40 by 30 feet, 10 feet high, probably gable roof
- 2 Support building, 105 by 40 feet and 10 feet high, with a 25- by 5-foot wing on the northeast corner of the building
- 3 Support building 30 by 25 feet, gable roof
- 4 Probable semiburied structure 80 by 20 feet, gable roof with 2 probable dormers
- 5 Support building 70 by 40 feet and 15 feet high, flat roof
- 6 Support building 45 by 15 feet, gable roof
- 7 T-shaped probable administration building 135 by 65 feet and 40 feet high. The bar of the T is 10 feet high and has a gable roof; the stem is 15 feet high and has a flat roof
- 8 Possible shed 20 by 20 feet and 10 feet high, flat roof
- 9 Support building 145 by 35 feet and 15 feet high with a 25- by 10-foot annex on west side of building; gable roof on building, flat roof on annex



FIGURE 30. SUPPORT AREA B.

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- 63 Open courtyard with 3 identical, interconnected rectangular buildings positioned on 3 sides and a semicircular structure on the fourth. Maximum overall dimensions of the combined structure are 80 by 60 feet
- 64 Support building 35 by 15 feet and 10 feet high, gable roof
- 65 Support building 35 by 10 feet and 10 feet high, gable roof
- 66 Standpipe 35 feet high.

## Support Area B

Support Area B is situated along both sides of the rail

line, north of Operational Area A, and contains 105 structures, some of which were still under construction in March 1965 (Figure 30). In the rail transshipment area, large quantities of bulky material were observed (Mission 4016). Complete descriptions and measurements follow. All height measurements are approximate; structures have gable roofs unless otherwise specified (item numbers are keyed to Figure 31).

- 1 Probable shed 40 by 35 feet, flat roof
- 2 Support building 100 by 35 feet, probably gable roof
- 3 Support building 95 by 35 feet and 10 feet high
- 4, 5 Multistory apartment-type buildings 270 by 40 feet and 50 feet high, flat roofs

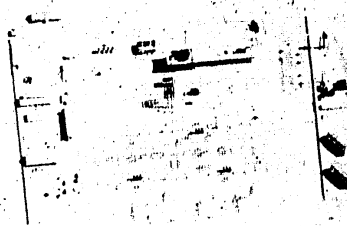


FIGURE 32. SUBSTATION.

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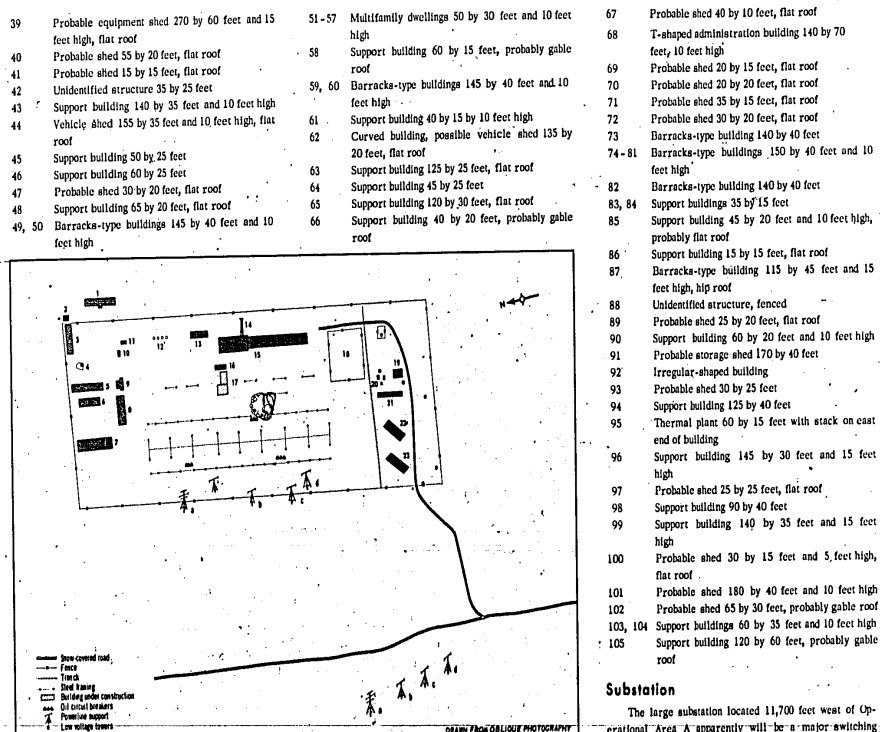
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- 6-10 Multistory apartment-type buildings 260 by 30 feet and 50 feet high, flat roofs
- 11, 12 Probable multistory apartment-type buildings under construction 270 by 30 feet
- 13 L-shaped support building 115 by 45 feet
- 14-17 Unidentified structures
- 18 Standpipe approximately 110 feet high
- 19 Probable support building 240 by 100 feet, possibly gable roof
- 20 Probable support building 65 by 25 feet, possibly gable roof
- 21 Support building 120 by 65 feet, clerestory roof
- 22 Multistory apartment-type building 200 by 45 feet and 55 feet high, flat roof
- 23 Possible multistory apartment-type building under construction 200 by 45 feet
- 24 Support building 125 by 40 feet and 35 feet high, flat roof
- 25 Support building 225 by 55 feet and 35 feet high, flat roof
- 26 Probable shed 20 by 10 feet and 10 feet high, flat roof
- 27 Probable shed 70 by 35 feet and 10 feet high, flat roof
- 28 U-shaped probable administration building 165 by 75 feet and 25 feet high, stepped roof
- 29 Support building 100 by 40 feet, flat roof
- 30 Support building 100 by 35 feet and 10 feet high, flat roof
- 31 Support building 275 by 55 feet and 20 feet high
- 32 Support building 210 by 40 feet and 10 feet high, flat roof
- 33 Probable building under construction 160 by 50 feet
- 34 Support building 95 by 40 feet and 15 feet high, hip roof
- 35 Support building 185 by 60 feet and 10 feet high, flat roof. Rectangular structure 45 by 20 feet on west end of roof, flat roof
- 36 Support building 250 by 60 and 35 feet high, flat roof with 2 open circular structures on roof
- 37 Thermal plant 115 by 35 feet, flat roof with stack approximately 80 feet high
- 38 Possible building under construction

25X1  
25X1

25X1

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## Substation

The large substation located 11,700 feet west of Operational Area A apparently will be a major switching substation on the 220-kilovolt (kv) ring around Moscow.

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Electrical equipment was still in the process of being installed in March 1965 (Figure 32). At that time, four 220-kv powerlines from the southwest had reached the 220-kv switching yard of the substation. Of these, the northernmost powerline (Figure 33, item a) is supported by standard USSR design 2-circuit, 3-phase, steel or aluminum lattice powerline supports, but switching and circuit-breaker equipment had been provided in the switching yard to receive only one of these circuits. The supports (items b-d) for each of the remaining three 220-kv powerlines appear to be designed to carry only 2 conductors apiece; consequently, two 3-phase circuits have to be carried on 3 lines of powerline supports. Both circuits are tied into switching and circuit breaker equipment in the switching yard.

On March 1965 photography there was no evidence of the installation of 220-kv stepdown transformers; however, the equipment already installed indicated that at least 3 banks of 3, single-phase, stepdown 220/35/10- or 6-kv transformers probably were planned.

A small separately secured switching yard was located in the southeast corner of the substation, and March 1965 photography revealed switching and circuit-breaker equipment for 4 incoming 35-kv circuits and for 2 internal circuits. No stepdown transformers were visible, but it is possible that the control building may house low-voltage switching equipment as well as 35/10- or 6-kv transformers. The south end of the control building could contain as many as 90 low-voltage switching positions.

Complete descriptions and mensural data follow (item numbers are keyed to Figure 33).

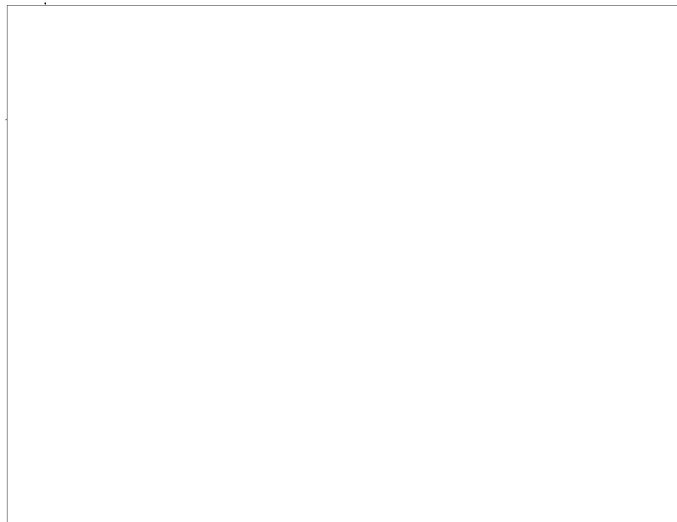
- 1 Support building 125 by 30 feet, gable roof
- 2 Probable shed 20 by 15 feet, flat roof
- 3 Probable shed 120 by 25 feet, gable roof
- 4 Unidentified enclosed object, measurements undetermined
- 5 Support building 130 by 30 feet, probably gable roof
- 6 Support building 85 by 40 feet, probably gable roof
- 7 Support building 145 by 50 feet, gable roof
- 8 Support building 130 by 35 feet, gable roof

- 9 T-shaped structure, with the bar measuring 45 by 15 feet and stem 30 by 15 feet
- 10 Unidentified structure, approximately 20 by 10 feet
- 11 Unidentified structure 30 by 15 feet
- 12 Four tanks, possibly for transformer-oil storage
- 13 Support building 70 by 25 feet, gable roof
- 14 Possible floodlight tower
- 15 Control building 110 by 70 feet and 40 feet high with low-voltage switching bay attached, 255 by 20 feet, flat roof
- 16 Support building 45 by 20 feet and 20 feet high, probably flat roof
- 17 Possible steel framing for transformer maintenance building
- 18 Separately secured 35-kv switching yard
- 19 Support building 35 by 35 feet, gable roof
- 20 Three unidentified structures, measurements undetermined
- 21 Support building 105 by 15 feet
- 22, 23 Probable housing buildings 105 by 40 feet, probably gable roofs.

## REFERENCES

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REFERENCES (Continued)



MAPS OR CHARTS

- DIA. US Air Target Chart, Series 800, Sheet 0154-03HL, 2d ed, Mar 63, scale 1:800,000 (SECRET)
- DIA. US Air Target Chart, Series 800, Sheet 0154-03HL, 2d ed, Apr 63, scale 1:800,000 (SECRET)
- DIA. US Air Target Chart, Series 800, Sheet 0167-03HL, 2d ed, Mar 63, scale 1:800,000 (SECRET)
- DIA. US Air Target Chart, Series 800, Sheet 0167-10HL, 2d ed, Feb 63, scale 1:800,000 (SECRET)

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